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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/604,702	06/23/00	FURUHATA	T 15.14/5046

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EXAMINER	
BOOTH R	
ART UNIT	**PAPER NUMBER**
2812	

DATE MAILED: 11/08/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/604,702	Applicant(s) FURUHATA ET AL.	
	Examiner Richard A. Booth	Art Unit 2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-23 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-23 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-11, 19-21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over See et al., U.S. Patent 5,674,762 in view of Sung et al., U.S. Patent 6,194,269 B1.

See et al. shows the invention substantially as claimed including a non-volatile memory transistor (see column 1, lines 23-27 and item 304 in Figure 10); a first transistor region 301 including a first voltage type that operates at a first voltage level; a second transistor region 303 that operates at a second voltage level; and a third transistor region 302 that operates at a third voltage level (see Figure 10 and column 5, lines 1-19).

See et al. lacks anticipation of the non-volatile memory transistor being a split-gate device.

Sung et al. discloses forming a split-gate non-volatile memory device (see Figure 1, for example). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the split-gate non volatile memory device of Sung et al. in the primary reference of See et al. because

the split-gate device eliminates the need for a separate select transistor thus minimizing space on the semiconductor substrate.

Regarding the particular thickness of some of the layers used in the device, it would be a function of routine experimentation depending upon particular programming voltages and scaling factors to determine the optimum thicknesses of the device features and would not lend patentability to the instant application absent the showing of unexpected results.

Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schlais et al., U.S. Patent 5,153,143 in view of Shimizu, U.S. Patent 4,651,406.

Schlais et al. shows the invention as claimed including a split-gate non-volatile memory transistor 58 (see Figure 1); a first transistor region including a first voltage-type transistor 40 that operates at a first voltage level; and a second voltage region that includes a second voltage type transistor 32 that operates at a second voltage level. With respect to forming the second voltage-type's gate insulation layer of two layers rather than one, structurally there is no difference in the final product (one layer could be considered an infinite number of smaller layers) (see column 4, line 23 – column 6, line 16).

Schlais et al. lacks anticipation of a third voltage-type transistor region.

Shimizu discloses a high voltage transistor region C (see Figure 2) including a high voltage transistor (see column 1, line 45 – column 2, line 3 which discusses the use of high voltage peripheral transistors). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to

incorporate a high voltage peripheral transistor in the primary reference of Schlais et al. because this will allow for withstanding of the high voltages required during memory device programming and provide additional protection for the memory based structure.

Regarding the particular thickness of some of the layers used in the device, it would be a function of routine experimentation depending upon particular programming voltages and scaling factors to determine the optimum thicknesses of the device features and would not lend patentability to the instant application absent the showing of unexpected results.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard A. Booth whose telephone number is 308-3446. The examiner can normally be reached on Monday-Thursday from 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on 308-3325. The fax phone numbers for the organization where this application or proceeding is assigned are 308-7724 for regular communications and 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-1782.

Richard A. Booth
Primary Examiner
Art Unit 2812